

WHAT IS CLAIMED IS:

1. A duct assembly suitable for fire-rated applications, said duct assembly comprising:

a liner section having an inner surface and an outer surface and a first end and a second end;

a non-combustible layer, said non-combustible layer being attached to and surrounding the outer surface of said duct liner;

a flange assembly for the first end of said liner section, said flange assembly being removably coupled to said first end;

another flange assembly for the second end of said liner section, said flange assembly being removably coupled to said second end;

a fire-resistant sealants applied to joints between said liner section and said flange assemblies to prevent the flow of air between the inner surface of said liner section and exterior to said duct assembly; and

wherein one or both of said flange assemblies are coupled to said liner section during fabrication at a factory.

2. The duct assembly as claimed in claim 1, wherein one or both of said flange assemblies include a fastening mechanism for connecting one or more of said duct assemblies.

3. The duct assembly as claimed in claim 2, wherein said non-combustible layer comprises a fire-resistant panel, and said fire-resistant panel is attached to said liner section by a plurality of fasteners.

4. The duct assembly as claimed in claim 3, wherein said non-combustible layer comprises one or more rated fire-resistant panels.

5. A fire-rated duct assembly comprising: ✓
an inner duct liner having a first end, a second end, an inner surface and an outer surface;
one or more fire-resistant panels, said fire-resistant panels being attached to the outside surface of said inner duct liner using one or more fasteners;
a first connector member and fasteners, said fasteners coupling said connector member to one end of said inner duct liner and said fire-resistant panel;
a second connector member and fasteners, said fasteners coupling said second connector member to the second end of said inner duct liner and said fire-resistant panel;
wherein said connector members, said inner duct liner and said fire-resistant panels are assembled at a factory so that said duct assembly is shipped as a unit.
6. The fire-resistant duct assembly as claimed in claim 5, wherein said connector members include a fastening mechanism for connecting one or more of said duct assemblies in the field.
7. The fire-resistant duct assembly as claimed in claim 5 or 6, wherein said fasteners for one of said connector members comprise removable fasteners for disconnecting and reconnecting said connector member for said duct assembly so that said duct assembly is modifiable in a field installation. ~
8. The fire-resistant duct assembly as claimed in claim 5 or 6, wherein the fasteners for one of said connector members are field installable and said associated connector member is shipped separate from the duct assembly so that the duct assembly is field modifiable. ~

9. A fire-rated duct assembly comprising:

- a rectangular inner duct liner having a first end, a second end, an inner surface and an outer surface;

- a plurality of fire-resistant panels, each of said fire-resistant panels being attached to one side of the outside surface of said rectangular inner duct liner using one or more fasteners;

- a first flanged connector member and fasteners, said fasteners coupling said first flanged connector member to one end of said rectangular inner duct liner and said fire-resistant panels;

- a second flanged connector member and fasteners, said fasteners coupling said second flanged connector member to the second end of said rectangular inner duct liner and said fire-resistant panels;

- one of said flanged connector members including a fastening mechanism for connecting one or more of said duct assemblies in a field site;

- a fire-resistant sealant applied to said inner duct liner and said fire-resistant panels to seal said inner duct liner from air flow exterior to the duct assembly; and

- wherein said flanged connector members, said rectangular inner duct liner and said fire-resistant panels are assembled at a factory so that said duct assembly is shipped as a unit to the field site.

10. The fire-resistant duct assembly as claimed in claim 9, wherein said fasteners for one of said flange connector members comprise removable fasteners for disconnecting and reconnecting said flange connector member for said duct assembly so that said duct assembly is modifiable at the field site.

11. The fire-resistant duct assembly as claimed in claim 10, wherein the fasteners for one of said flange connector members are field installable and

said associated flange connector member is shipped separate from the duct assembly so that the duct assembly is field modifiable.

12. The fire-resistant duct assembly as claimed in claim 9, wherein the fasteners for one of said flange connector members are field installable and said associated flange connector member is shipped separate from the duct assembly so that the duct assembly is field modifiable.

13. A duct assembly for providing a fire-rated conduit, said duct assembly comprising:

- an inner duct liner having a first end, a second end, an inner surface and an outer surface;

- one or more fire-resistant panels, said fire-resistant panels being attached to the outside surface of said inner duct liner using one or more fasteners;

- a first connector member and fasteners, said fasteners coupling said connector member to one end of said inner duct liner and said fire-resistant panel;

- a second connector member and fasteners, said fasteners coupling said second connector member to the second end of said inner duct liner and said fire-resistant panel;

- wherein said connector members, said inner duct liner and said fire-resistant panels are formed into an assembly at a factory, said assembly being shipped as a unit; and

- wherein said assembly forms a conduit section.

14. The duct assembly as claimed in claim 13, wherein said conduit sections are coupled together to form a conduit for running electrical wires.

15. The duct assembly as claimed in claim 13, wherein said conduit sections are coupled together to form a conduit for running plumbing.

16. The duct assembly as claimed in claim 13, wherein said conduit sections are coupled together to form a conduit for smoke evacuation.